

Operating Manual

For CS-100 Drilling Rig

Serial No. : 2013-003



ISO9001



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1. TECHNICAL SPECIFICATION

1-1. GENERAL

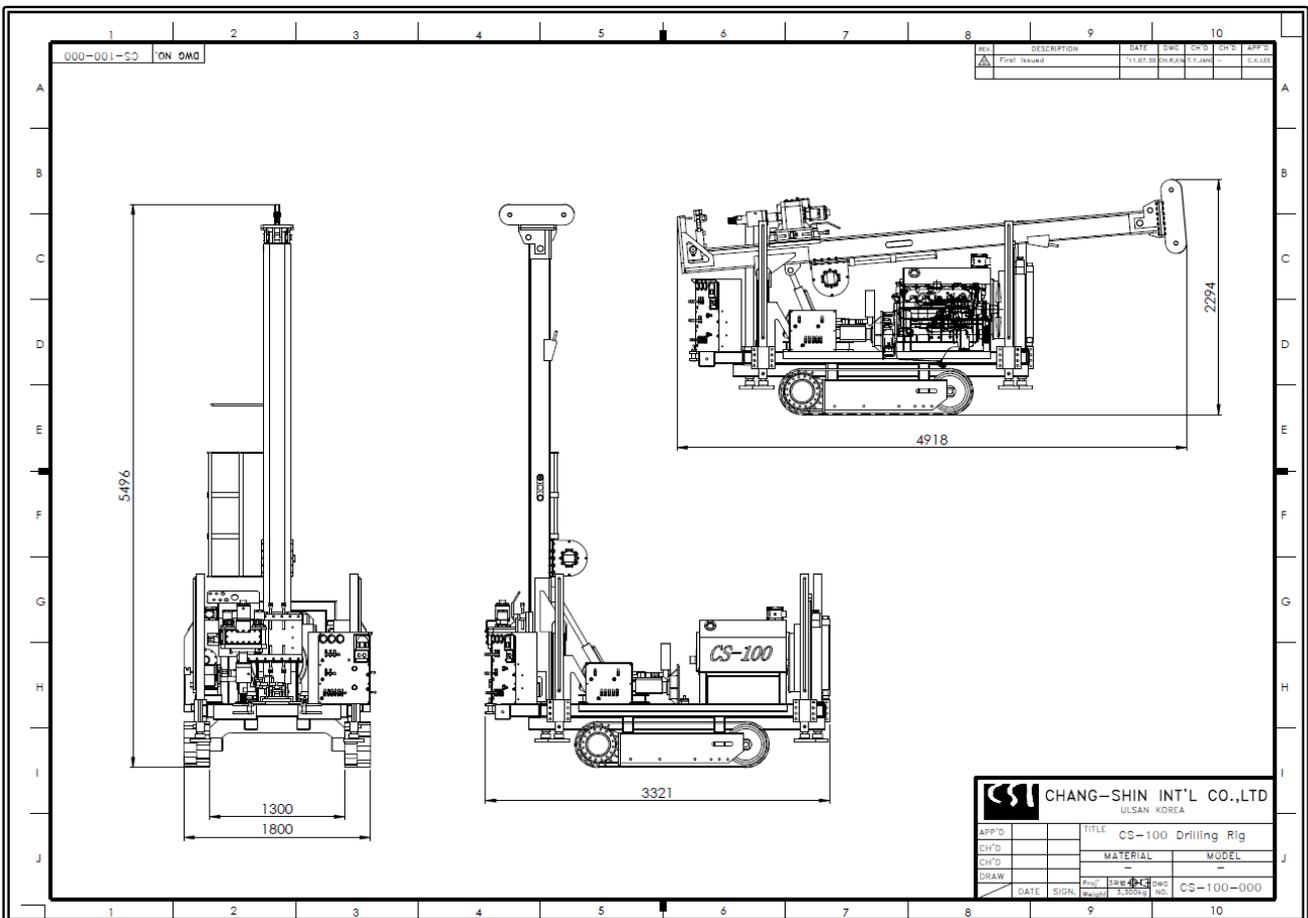
CS-100 Drilling rig is very powerful drilling rig with simple design providing excellent performance at minimum maintenance for percussion drilling with down the hole hammer, rotary drilling with mud, reverse drilling crown core drilling and reverse circulation drilling with optional drive head.

This rig adapts powerful engine & hydraulic pump, carries out various drilling task efficiently.

With strong and extensible mast, it grants very stable & strong power in pull back & pull up operation.

1-2. OVERALL DIMENSIONS

Length	Width	Height		Weight
		Mast Down	Mast Up	
4.9	1.8 M	2.3 M	5.5 M	3.8 Ton



1-3. RATED DRILLING CAPACITY

In favorable condition

- For DTH Hammering : Max 100 meters for 6" Hammer with 88.9mm Drill rod
- For Rotary Drilling (Tricone bit, coring) : Max 100 meters

1-4. CRAWLER BASE

- Overall Length : 1.9 M
- Overall Width : 1.8 M
- Overall Height : 0.45 M
- Rubber Track Width : 0.25 M
- Moving Speed : Max 3km / h)

1-5. RIG FRAME

Rig frame is mounted on the crawler base frame and has four(4) hydraulic outriggers (two on front, two on rear) to avoid any deforming of the crawler. This rig frame makes possible powerful and steady drilling.

1-6. MAST

► FEATURES

- Mast has strong square box feature made of high quality mechanic structure steel plate, assures safe & easy handling for 3meter drill pipes & drill strings.
- Mast is self standing & lying by hydraulic cylinders controlled on control panel.
- There are several wire or chain sheaves at top & bottom of the mast for the operation of pull-back & pull down.

► SPECIFICATIONS

- Total Load Capacity : 5ton
- Length : 4.6 M
- Feeding Method : Hydraulic cylinder with chain

1-7. ROTARY HEAD

- Head box is made of electrically welded high grade steel.
- Output shaft : API 2-3/8" REG Pin
- Output shaft of shock absorber : API (NC23 Pin).
- Rotation provided through oil bath gear and bearing with air proof.
- Feed operation is provided by hydraulic cylinder with chain.
- For the down the hole hammer is standard, Can be changed for the other works.

► SPECIFICATIONS

Pull-up Capacity	:	Max 3,260 kgf
Pull-down Capacity	:	Max 1,970 kgf
Rotation Torque	:	100 kgf*m (Max 200kgf*m)
Rotation Speed	:	0~60 rpm
Output Shaft Connection	:	API NC23 Pin
Swivel Connection	:	1 1/2"
Feed Speed	:	0 ~ 36.6 m / min

1-8. ENGINE

- Doosan Commercial Engine / PU066

1-9. HYDRAULIC SYSTEM

- This rig is totally operated by hydraulics.
- Hydraulic system is open loop system with 3 hydraulic pumps.
- Hydraulic power is generated by deck mounted diesel engine for following operation.

► OPERATION

- Pull up - Pull down
- Rotation of the Rotary Head
- Hydraulic clamp
- All hydraulic cylinder
- Main winch
- Other operations

► **MAIN COMPONENTS**

- Hydraulic Pump : SAP5030-40*40*20RSS
- Hydraulic Cooler : Air fan driven by engine
- Hydraulic Tank Capacity : 140ℓ
- Heavy Duty Filter : 10μ grade
- Motors
- Valves
- Distributor
- Gauges
- Rigid and flexible pipes & hoses
- Other necessary accessories in other to assure the efficient working condition.

1-10. CLAMP & BREAK OUT

- Hydraulic clamp works for Holding and unscrewing the drill pipes and drill casing or drill collars, stabilizer and drill strings with hydraulic cylinder.
- Clamp is attached to the mast frame by welding.
- Opening : Φ 225 mm

1-11. WINCH

► **MAIN WINCH**

- The winch works with jib boom & sheaves mounted at top of the mast.
- Working Capacity : 1 Ton

1-12. OUTRIGGER

► **FUNCTION**

- Stabilize the rig itself
- Keep the horizontal & leveling during operation
- Sustain the power in pull-back operation

► **FEATURES**

- Each outrigger moves independently.
- Pilot check valve attached for failure.
- Square structure outside.
- Non slip floor shoe.

1-13. CONTROL PANEL

Control panel contains all engine gauges, hydraulic system controllers.

It makes the driller control all operation easily at the platform located on Side of mast.

► **FEATURES**

- Engine Throttle
- Engine start and stop
- cooling water temperature.
- Hydraulic pressure
- All control lever including for machine operating.
- Main indicator

1-14. CONNECTION MANIFOLD BLOCK

Connection manifold block locates at side of mast in order to connect the fluid(air or mud) to top head drive for each operation.

► **PORT SIZE**

- | | | |
|----------|---|------------------|
| Air Port | : | 1 1/2" connector |
| Mud Port | : | 1 1/2" connector |

1-15. ELECTRICAL SYSTEM

- 24V

1-16. MUD PUMP

Main purpose	:	Rotary Drilling / Water Pumping
Control & Operation	:	Controlled by control panel & Hydraulically driven
Capacity	:	107ℓ / min
Pressure	:	Max. 20 bar

1-17. IDENTIFICATION

1-17-1. Engine

	Model	PU066	
	Serial Number	EARPA318968	
	Rating	116(85) ps(kW)	
	Engine Speed	2,800 rpm	
	Displacement	5.785 liters	
		6-102 × 118 (Cyl. - Bore × Stroke, mm)	
	Production Date	2013 (year)	

1-17-2. Hydraulic Pumps & Motor

	OIL PRESSURE PUMP	MUD PUMP
Model Name	ASEDA	P-200
Serial No.	120821PB	A 6745
Picture		

Hydraulic Motor		
Model Name	PARKER : TE165	
Serial No.	10913AB 2495	16913AB 0309
Picture		

WINCH		
Model Name	JMF-16-01-VBC-RJ-31	
Serial No.	2011-06-0012	
Picture		

1-17-3. Cylinders

	Part Name	Dimension		QTY
		Cylinder (ID-OD)	Stroke	
1	Outrigger Up/Down	70-80	1340	4
2	Master Tilting	70-80	420	1
3	Top Feed	80-90	1730	1
4	Break	60-70	85	1
5	Jaw	90-100	165	2
6	Rotary Head Sliding	50-60	230	1